

## 2. FOOD HABITS OF THE HIMALAYAN BLACK BEAR (*SELENARCTOS THIBETANUS*) IN THE DACHIGAM SANCTUARY, KASHMIR

Jerdon (1874), Stockley (1936), and others have commented on the food habits of the Himalayan black bear (*Selenarctos thibetanus*) in general terms. Prater (1965), for example, wrote: 'Food varies with season. In summer they live largely on wild fruits and berries and raid orchards for pears, apricots, and nuts of various kinds . . . This is the season when honey is to be had . . . Fields of ripening corn or maize are raided in the autumn. Insects, termites, and the larvae of beetles provide variety to this diet. It is the most carnivorous of the bears, and many living near villages kill sheep and goats . . .' However, detailed data on food habits for a particular area are not available. While studying the hangul (*Cervus elaphus hanglu*) in the Dachigam Sanctuary, which lies about 20 km. from the city of Srinagar, I encountered black bears on 17 occasions between October 6 and 21, 1968, and made observations on their feeding behaviour. In addition, bear droppings were examined to provide quantitative information on food habits.

All observations were made in the lower part of the Dachigam valley along 13 km. of the Dagwan River. The bears confined themselves primarily to the forested floor and lower slopes of the narrow valley between the altitudes of about 1750 and 2000 m. The deciduous forest consists predominantly of mulberry trees (*Morus* sp.), oak (*Quercus* sp.), willow (*Salix* sp.), and walnut (*Juglans regia*) as well as *Celtis australis*, *Rhus cotinus*, *Populus* sp. and others. Undergrowth is dense with such shrubs as *Rubus* sp., *Rosa* sp., *Indigofera geradiana*, and *Parrotia jacquemontiana* common.

**Food habits:** Eighty-two droppings were examined to determine what the bears had eaten (Table). The most important foods were *Celtis australis* (40.2%), walnuts (32.9%), and acorns (12.1%). Although the figures are expressed as frequency of occurrence, they also give an indication of volume because most droppings contained the remnants of only one food item. In early October, walnuts and acorns were prominent in the diet, but by late October, when these two species had been largely eaten up, the bears switched to *Celtis*, a pea-sized fruit ripening at that time. Scattered apricot and apple trees and grape vines grow in the forest and bears ate the fruits. Maize was obtained in the fields bordering the sanctuary. Only one dropping contained the fruits of wild rose even though they were abundant. Of the 9 kinds of fruit eaten, 5 are not indigenous to

the area. Their frequency of occurrence in the droppings was 31.4% (Table), indicating that these introduced species contributed substantially to the diet of the bears.

TABLE

FREQUENCY OF OCCURRENCE OF FOOD ITEMS IN 82 BLACK BEAR DROPPINGS

Food items	Frequency of occurrence (in per cent)
<i>Celtis australis</i>	40.2
Walnut	32.9
*Oak	12.1
*Grape	8.5
<i>Zizyphus vulgaris</i>	4.8
*Apple	4.8
*Maize	3.6
*Apricot	2.4
Rose	1.2
Feather	1.2
Hair	1.2
Wasp	1.2

\*Introduced or domesticated plants.

Animal matter was uncommon in the droppings (3.6%). One contained about 20 wasps, a second several unidentified feathers, and a third a number of brown hairs possibly belonging to hangul or cow. H. Nedou, a sportsman in Srinagar, told me that he once saw a black bear eating a hangul young, and the predilection of bears for livestock has been repeatedly noted (Stockley 1936; Prater 1965). The bears in the lower Dachigam Sanctuary do not kill livestock according to the Forest Department. It is possible that the hair in the dropping represented carrion.

The results from the analysis of the droppings were in general confirmed by observing bears directly. Of 16 feeding animals seen, 13 were eating *Celtis*, two were in walnut trees, and one was picking acorns off the ground.

These data on food habits apply only to October. The same species are probably eaten also in September and November but of different amounts. In July and August, maize and mulberry are commonly taken, according to the local forest staff, and in May and June, before fruits ripen, grass and leaves are said to form the main part of the diet. I found two *Pinus excelsa* trees whose bark had been heavily clawed several months previously, and I was told that

bears eat the resin. Black bears are largely inactive during the winter from December to April.

**Feeding behaviour:** Black bears obtained much of their fruit by climbing into trees, sometimes into the upper branches 10 or more metres above ground. After choosing a horizontal branch or a fork on which to lie, sit, squat, or stand, they reached out with their forepaws and pulled fruit-bearing twigs toward them. Small twigs simply were hooked with the long, curved claws of one paw and broken inward, but large branches required more effort. One bear bit repeatedly into the base of a branch, then bent it inward with a paw until it snapped and the fruit could be reached. Another bear broke a branch by pulling with both paws and then with its mouth as well. Afterward it bent twig after twig toward its face and plucked the *Celtis* berries with the lips, the usual method of detaching fruit. In one instance, a bear broke several branches in a walnut tree, but most nuts fell to the ground. The animal descended, ate the fallen fruit, then climbed back up and bent in several more branches. Virtually all walnut, oak and *Celtis* trees had several broken branches, attesting to the heavy use of these species by bears in the sanctuary.

Although Prater (1965) stated that black bears are primarily nocturnal, those in the Dachigam Sanctuary were frequently active during the day. Bears were seen feeding 4 times between 06:00 and 09:00 hours, twice between 09:00 and 12:00 hours, 4 times between 12:00 and 15:00 hours, and 6 times between 15:00 and 18:00 hours.

On one occasion a feeding bear broke several branches inward while standing in the fork of a *Celtis* tree. Each discarded branch was pushed and trampled into the fork, forming a crude platform which resembled the sleeping nests of the great apes and the Malayan bear (*Helarctos malayanus*) as reported by Schaller (1964). After the bear finished eating, it rested on this platform in the morning sun. Novikov (1962) noted that a feeding bear 'drags down and breaks numerous branches, which gave rise to the assumption that the black bear builds special "arbors" for resting'. If black bears ever build nests solely for resting, or only inadvertently in the course of feeding, is not certain but observations by Tun Yin (1954) suggest they may do so.

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### 3. NOTES ON THE INTER-BREEDING BETWEEN DOMESTIC AND WILD BUFFALO IN UPPER ASSAM

A number of interesting observations have been made in the past referring to Lower Assam and other parts of India, on the use made for breeding by the local village people, of the solitary wild bull buffalo that leaves the jungle temporarily at certain times of the year to join the domestic herds grazing in or near the jungle. There are varying opinions as to whether the wild bull and its subsequent inter-breeding with domestic animals is an advantage or otherwise, and likewise whether the bull is one that has been driven out of a wild herd by a stronger bull or has left the jungle of its own free will. During the past five years I have been able to devote considerable time to the study of this subject as applicable to this extreme corner of Assam, and in living close to the edge of the jungle that forms the local habitat of the wild buffalo, it has been possible for me to investigate personally instances of wild bulls joining the near-by village herds.

#### STUDY AREA

My observations apply to the area that may be termed Upper Assam, comprising the south bank of the Brahmaputra north and east of Dibrugarh, to Saikhowa on the Lohit River in the extreme